

# 1

## ABSTRACT OF THE DISCLOSURE

This invention provides a manual input device by which the operation feeling (tactile sensation) provided to the user manipulating its knob can be changed as appropriate, and also a car-mounted apparatus controller which uses this type of manual input device. A manual input device comprises: a housing; a control shaft which is rotatably supported by the housing; a knob fixed to one end of the control shaft; and feeling providing means, actuator and first and second position sensors which are all housed in the housing. The feeling providing means comprises: plural discs fixed to the control shaft, bearing first to third feeling patterns on their circumferential surfaces; and a ball holder which works in conjunction with the discs to provide an operation feeling to the knob. The actuator is driven to move up or down the ball holder to select the feeling pattern to be elastically forced to contact the ball to change an operation feeling as the user rotates the knob. The car-mounted apparatus controller incorporates this type of manual input device as means for functional control of car-mounted electric apparatuses.

Patent No. 6,499,001